



**Department
of Health**

Adult Immunization

Challenges for Practitioners

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Bureau of Immunization
May 2015

VACCINES FOR ADULTS – not just kid stuff



Objectives

- Review of Adult Immunization Schedule
- Review indications for Tdap and HPV vaccine for adults
- Adult recommendations for Measles, Mumps and Rubella (MMR) Vaccine
- Recognize the benefits and limitations of zoster, influenza, and pneumococcal vaccines for older adults
- Summarize approaches to enhance protection of older persons against vaccine preventable diseases

ACIP Recommended Adult Immunization Schedules 2015

- Adult: 19 years of age and older
 - Age based recommendations
 - Risk conditions
 - Updated and published annually
 - Published concurrently by: ACIP, AAFP and ACOG
 - Available at www.cdc.gov/vaccines

What Vaccines Should Adults Receive?

Recommended Adult Immunization Schedule—United States - 2015

Note: These recommendations must be read with the footnotes that follow containing number of doses, intervals between doses, and other important information.

Figure 1. Recommended adult immunization schedule, by vaccine and age group¹

VACCINE ▼	AGE GROUP ►	19-21 years	22-26 years	27-49 years	50-59 years	60-64 years	≥ 65 years
Influenza ^{2,3}		1 dose annually					
Tetanus, diphtheria, pertussis (Td/Tdap) ^{1,2}		Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs					
Varicella ⁴		2 doses					
Human papillomavirus (HPV) Female ^{5,6}		3 doses					
Human papillomavirus (HPV) Male ^{5,6}		3 doses					
Zoster ⁴						1 dose	
Measles, mumps, rubella (MMR) ^{7,8}		1 or 2 doses					
Pneumococcal 13-valent conjugate (PCV13) ^{9,10}		1-time dose					
Pneumococcal polysaccharide (PPSV23) ⁴		1 or 2 doses					1 dose
Meningococcal ⁴		1 or more doses					
Hepatitis A ^{4,10}		2 doses					
Hepatitis B ^{4,11}		3 doses					
Haemophilus influenzae type b (Hib) ^{4,12}		1 or 3 doses					

*Covered by the Vaccine Injury Compensation Program

For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection; zoster vaccine recommended regardless of prior episode of zoster

Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indication)

No recommendation

Report all clinically significant postvaccination reactions to the Vaccine Adverse Event Reporting System (VAERS). Reporting forms and instructions on filing a VAERS report are available at www.vaers.hhs.gov or by telephone, 800-822-7967.

Information on how to file a Vaccine Injury Compensation Program claim is available at www.hrsa.gov/vaccinecompensation or by telephone, 800-338-2382. To file a claim for vaccine injury, contact the U.S. Court of Federal Claims, 717 Madison Place, N.W., Washington, D.C. 20005; telephone, 202-357-6400.

Additional information about the vaccines in this schedule, extent of available data, and contraindications for vaccination is also available at www.cdc.gov/vaccines or from the CDC-INFO Contact Center at 800-CDC-INFO (800-232-4636) in English and Spanish, 8:00 a.m. - 8:00 p.m. Eastern Time, Monday - Friday, excluding holidays.

Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.

The recommendations in this schedule were approved by the Centers for Disease Control and Prevention's (CDC) Advisory Committee on Immunization Practices (ACIP), the American Academy of Family Physicians (AAFP), the American College of Physicians (ACP), American College of Obstetricians and Gynecologists (ACOG) and American College of Nurse-Midwives (ACNM).



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Adult Immunization Schedule based on medical condition

Figure 2. Vaccines that might be indicated for adults based on medical and other indications¹

VACCINE ▼	INDICATION ►	Pregnancy	Immuno-compromising conditions (excluding human immunodeficiency virus [HIV]) ^{4,6,7,8,12}	HIV infection CD4+ T lymphocyte count ^{4,6,7,8,12}	Men who have sex with men (MSM)	Kidney failure, end-stage renal disease, receipt of hemodialysis	Heart disease, chronic lung disease, chronic alcoholism	Asplenia (including elective splenectomy and persistent complement component deficiencies) ^{4,6}	Chronic liver disease	Diabetes	Healthcare personnel
Influenza ^{2,3}			1 dose IIV annually		1 dose IIV or LAV annually		1 dose IIV annually				1 dose IIV or LAV annually
Tetanus, diphtheria, pertussis (Td/Tdap) ^{3,5}		1 dose Tdap each pregnancy	Substitute 1-time dose of Tdap for Td booster; then boost with Td every 10 yrs								
Varicella ^{4,6}			Contraindicated				2 doses				
Human papillomavirus (HPV) Female ^{4,5}			3 doses through age 26 yrs				3 doses through age 26 yrs				
Human papillomavirus (HPV) Male ^{4,5}			3 doses through age 26 yrs				3 doses through age 21 yrs				
Zoster ⁶			Contraindicated				1 dose				
Measles, mumps, rubella (MMR) ^{2,7}			Contraindicated				1 or 2 doses				
Pneumococcal 13-valent conjugate (PCV13) ^{7,8}							1 dose				
Pneumococcal polysaccharide (PPSV23) ⁸							1 or 2 doses				
Meningococcal ^{7,9}							1 or more doses				
Hepatitis A ^{4,10}							2 doses				
Hepatitis B ^{4,11}							3 doses				
<i>Haemophilus influenzae</i> type b (Hib) ^{4,12}			post-HSCT recipients only				1 or 3 doses				

¹Covered by the Vaccine Injury Compensation Program

For all persons in this category who meet the age requirements and who lack documentation of vaccination or have no evidence of previous infection; zoster vaccine recommended regardless of prior episode of zoster

Recommended if some other risk factor is present (e.g., on the basis of medical, occupational, lifestyle, or other indications)

No recommendation



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These schedules indicate the recommended age groups and medical indications for which administration of currently licensed vaccines is commonly recommended for adults ages 19 years and older, as of February 1, 2015. For all vaccines being recommended on the Adult Immunization Schedule: a vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Licensed combination vaccines may be used whenever any components of the combination are indicated and when the vaccine's other components are not contraindicated. For detailed recommendations on all vaccines, including those used primarily for travelers or that are issued during the year, consult the manufacturers' package inserts and the complete statements from the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/hcp/acip-recs/index.html). Use of trade names and commercial sources is for identification only and does not imply endorsement by the U.S. Department of Health and Human Services.



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Tdap, HPV, Pneumococcal, Flu and MMR Vaccines

Tetanus, Diphtheria, Pertussis, Human Papilloma Virus, Pneumococcal, Flu and Measles, Mumps and Rubella



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Tdap

- Case study: Lisa
 - 25 year old RN, Healthcare Personnel (HCP)
 - Delivered her first child yesterday and is breastfeeding
 - She was diagnosed with gestational diabetes in this pregnancy

Lisa's Immunization History

- NYSIIS shows the following
 - Tdap at 11 years of age
 - No history of Tdap or influenza vaccination during her pregnancy
 - Up-to-date on other vaccines

Lisa – Question 1

- Should you administer a dose of Tdap vaccine before she and the baby are discharged?
 - Yes
 - No

Tdap and Pregnant Women

- Do not administer Tdap to *postpartum* women who have *already been vaccinated with Tdap*
 - Regardless of the length of time since Tdap vaccination
- Previously unvaccinated postpartum women (who never received a dose of Tdap) should be given Tdap immediately
- Administer Tdap to pregnant women in the 3rd trimester, between 27 and 36 weeks –**every pregnancy**

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6207a4.htm>



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Tdap for Adults

- Td booster every 10 years
- Ensure that Tdap is given as one of the boosters
- Tdap can be given earlier than 10 years
- Tdap is especially important for adults who are around infants

Lisa – Question 2

- Lisa was diagnosed with gestational diabetes during the pregnancy.

Is PPSV23 indicated?

-Yes

-No

Pneumococcal Vaccine- Risk (19-64 years)

- High
 - Smoker, Long-term care facility resident, or
 - Chronic conditions: heart disease (excluding hypertension), diabetes (excluding gestational diabetes), lung disease (including asthma), alcoholism, liver disease (including cirrhosis)
- Higher
 - CSF leaks or Cochlear implants
- Highest
 - Immunocompromised (including HIV infection),
 - Chronic renal failure or nephrotic syndrome, or
 - Asplenia

Pneumococcal Timing – Underlying Conditions

Age 19-64 Years – Underlying Conditions

- Prior doses count towards doses recommended below and do not need to be repeated.
- If PPSV23 given previously – wait one year before giving PCV13
 - when dose indicated, wait at least five years before giving a second dose of PPSV23.

High Risk

**Smoker,
Long-term facility resident, or
Chronic conditions:**

- heart disease (excluding hypertension)
- lung disease (including asthma)
- liver disease (including cirrhosis)
- diabetes
- alcoholism

**PPSV
23**

Highest Risk

Immunocompromised
(including HIV infection),
**Chronic renal failure,
Nephrotic syndrome, or
Asplenia**

**PCV
13**

8 week
Interval

**PPSV
23**

5 year
Interval

**PPSV
23**

Higher Risk

**CSF leaks or
Cochlear implants**

**PCV
13**

8 week
Interval

**PPSV
23**



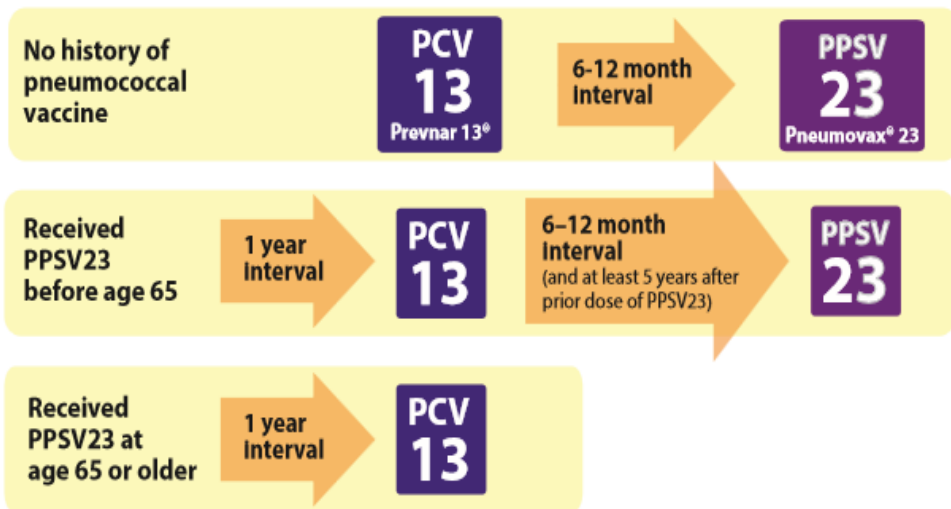
- DO NOT administer PCV13 and PPSV23 at the same visit.

Pneumococcal Timing – 65 + years

Pneumococcal Vaccine Timing

Age 65 Years or Older – Everyone

- If PCV13 was given before age 65 years, no additional PCV13 is needed.



Diabetes & Pneumococcal Vaccination

- PPSV23 (or PCV13) is not indicated for women with gestational diabetes alone – Lisa does not qualify for PPSV23 at this time
- Administer 1 dose of PPSV23 to persons 2 through 64 years of age who are diabetic

Lisa – Question 3

- Lisa will be starting a new position at work.
- The facility drew titers for measles, mumps, and rubella (MMR). The serology results came back **negative**. Should Lisa be revaccinated with MMR vaccine?
 - Yes
 - No

HCP, MMR Vaccine and Serologic Testing

- Persons, including HCP, with 2 documented doses of MMR vaccine are considered immune
- Regardless of the results of a subsequent serologic test for measles, mumps or rubella
- *Documented age-appropriate vaccination supersedes the results of subsequent serologic testing*

HCP, MMR Vaccine and Serologic Testing

- HCP who do not have documentation of MMR vaccination and whose serologic test is interpreted as "indeterminate" or "equivocal" should be considered not immune and should receive 2 doses of MMR
- ACIP does not recommend serologic testing after vaccination

Measles- presumptive evidence of immunity for adults

Documentation of:

- ***Non-high risk adults***
 - **One or more doses of measles containing vaccine** given on or after the first birthday or
 - Laboratory evidence of immunity (positive serological titer) or
 - Birth before January 1, 1957 or
 - Laboratory confirmation of disease (positive PCR or culture of measles disease)
- ***High risk adults = Healthcare Personnel (HCP), international travelers or students at post-secondary institutions***
 - **Two doses of measles containing vaccine** given on or after the first birthday or
 - Laboratory evidence of immunity (positive serological titer) or
 - Birth before January 1, 1957 or
 - Laboratory confirmation of disease (positive PCR or culture of measles disease)

Immunization of Healthcare Personnel - MMWR

Centers for Disease Control and Prevention

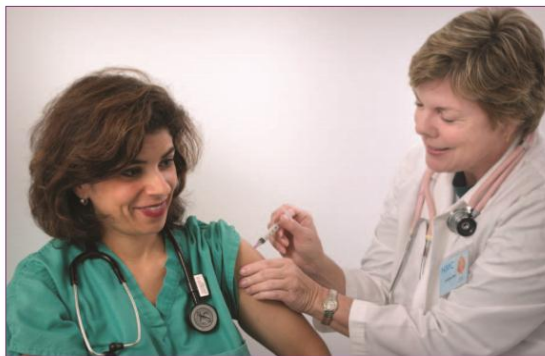
MMWR

Recommendations and Reports / Vol. 60 / No. 7

Morbidity and Mortality Weekly Report

November 25, 2011

Immunization of Health-Care Personnel Recommendations of the Advisory Committee on Immunization Practices (ACIP)



Lisa – Question 4

- Lisa's new position is in the neonatal nursery of a local suburban hospital. She is planning to continue breastfeeding after returning to work.
- Next flu season, Lisa can receive
 - IIV
 - LAIV
 - IIV or LAIV

HCP and LAIV

- LAIV may be administered to healthy persons who are not pregnant including:
 - Healthcare personnel and those in close contact with those in high-risk groups (except close contacts of severely immunocompromised persons requiring a protective environment)

Lisa – Question 5

- During her postpartum visit Lisa indicates she wants to be vaccinated with HPV vaccine. Can HPV vaccine be given to a woman who is breastfeeding?
 - Yes
 - No

Administering HPV Vaccine in Special Circumstances

- Vaccinate women who are younger than 27 years including women who:
 - Are breastfeeding
 - Are sexually active
 - Have evidence of present or past HPV infection
 - Including abnormal pap tests

A pregnancy test is not recommended prior to administering vaccine



HPV Vaccine - Men

- Young men through age 21 years
- Gay and bisexual males and immunocompromised males through age 26 years
- Should receive the quadrivalent vaccine

Lisa – Question 6

- Lisa is turning 26 tomorrow. Should the HPV vaccination series be started even though there is chance Lisa will be older than 26 years when it is completed?
 - Yes
 - No

HPV Vaccine

- HPV vaccine is routinely recommended for all women through age 26 years
- The HPV 3-dose series can be started at age 26 even if it will not be completed before she turns age 27
- The second and/or third doses of vaccine can be administered after age 26 to complete the vaccination series

Zoster and Pneumococcal Vaccine

Question

- All of the following vaccines are licensed for adults ≥ 65 years and older. Which vaccine is the most recently recommended by the ACIP for all persons ≥ 65 years and older?
 - 1) High dose influenza vaccine
 - 2) Pneumococcal conjugate vaccine 13 (PCV13)
 - 3) Zoster vaccine
 - 4) Tdap

Carol – Question 1

- Carol is 65 years of age. She came in today for the “pneumonia” and zoster vaccines. She also indicates she has no history of ever having had chickenpox. You...
 - Ask her to contact her mother
 - Administer zoster vaccine today
 - Draw blood for serology
 - Call medical records for archived charts

Zoster Vaccine

- Studies indicate that almost everyone born in the US before 1980 has had chickenpox
- No need to ask people age 60 years and older for their varicella disease history or to conduct lab tests for serologic evidence of prior varicella disease
- A person age 60 years or older who has no medical contraindications, is eligible for zoster vaccine regardless of their memory of having had chickenpox

Carol – Question 2

- Carol has no history of receiving the pneumococcal polysaccharide (PPSV23) and zoster vaccines, nor the pneumococcal conjugate vaccine (PCV13). Do PCV13 and PPSV23 need to be separated?
 - Yes
 - No

Pneumococcal Conjugate and Pneumococcal Polysaccharide Vaccines

- Pneumococcal conjugate vaccine (PCV13)
 - Recommended for all persons 65 years old or older
 - Should not be administered simultaneously with PPSV23
 - PCV13 should be administered first if ≥ 65 years
 - PPSV23 should be given 6 -12 months after PCV13

PCV13 for Adults


[Immunizations Home](#)
[Immunization Schedules](#)
[Recommendations and Guidelines](#)
Vaccines & Preventable Diseases
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[Vaccination Records](#)
[Vaccine Safety and Adverse Events](#)
[For Travelers](#)
[For Specific Groups of People](#)
[Campaign Materials](#)
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PCV13 (Pneumococcal Conjugate) Vaccine

Recommendations, Scenarios and Q&As for healthcare professionals about PCV13 for adults



On this Page

- [Recommendations](#)
- [Common Patient Scenarios](#)
- [Questions and Answers](#)

Recommendations

Recommendations for Adults with no Previous Pneumococcal Vaccinations

The Advisory Committee on Immunization Practices (ACIP) recommends that all adults 65 years of age or older receive a dose of PCV13 followed by a dose of PPSV23 6 to 12 months later. If a dose of PPSV23 cannot be given during this time window, it should be administered later, during the next doctor's visit. PCV13 and PPSV23 should not be administered on the same day; the minimum acceptable interval between PCV13 and PPSV23 is 8 weeks. ACIP also recommends that adults 19 years of age or older with immunocompromising conditions, functional or anatomic asplenia, CSF leaks, or cochlear implants, and who have not previously received PCV13 or PPSV23, should receive a dose of PCV13 first followed by a dose of PPSV23 at least 8 weeks later (see Table 1 below). Subsequent doses of PPSV23 should follow [current PPSV23 recommendations](#) for high risk adults. Specifically, a second PPSV23 dose is recommended 5 years after the first PPSV23 dose for persons aged 19 through 64 years with functional or anatomic asplenia and for persons with immunocompromising conditions. A second dose of PPSV23 is not recommended for persons 19 through 64 years of age with cochlear implants or CSF leaks. Additionally, those who received one or more doses of PPSV23 before age 65 years for any indication should receive another dose of the vaccine at age 65 years or older if at least 5 years have elapsed since their previous PPSV23 dose.

Recommendations for Adults with Previous Pneumococcal Polysaccharide Vaccinations (PPSV23)

Adults 65 years of age or older who have not previously received PCV13 and who have previously received one or more doses of PPSV23 should receive a dose of PCV13. The dose of PCV13 should be

Abbreviations

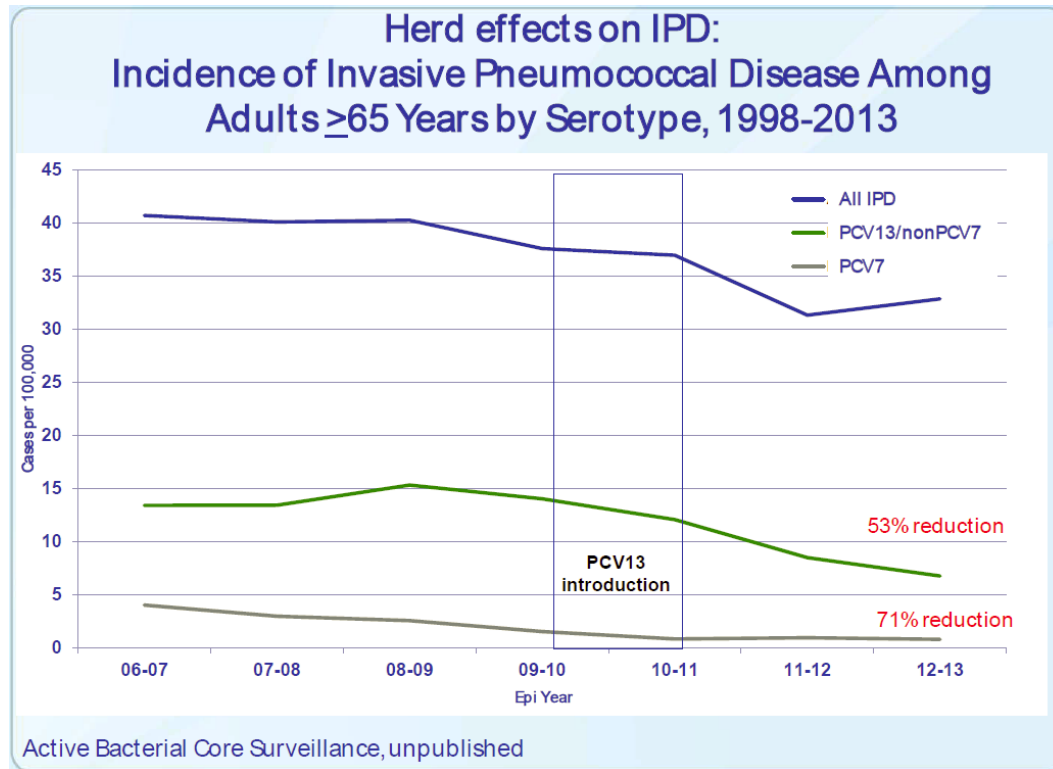
- PCV, or PCV13 = Pneumococcal Conjugate vaccine
- PPV or PPSV23 = Pneumococcal Polysaccharide vaccine

Contact Us:

Centers for Disease Control and Prevention
 1600 Clifton Rd
 Atlanta, GA 30333

 800-CDC-INFO
 (800-232-4636)
 TTY: (888) 232-6348
[Contact CDC-INFO](#)

PCV13 Herd Effects: Incidence of IPD Among Adults ≥ 65 Years by Serotype, 2006-2013



Carol – Question 3

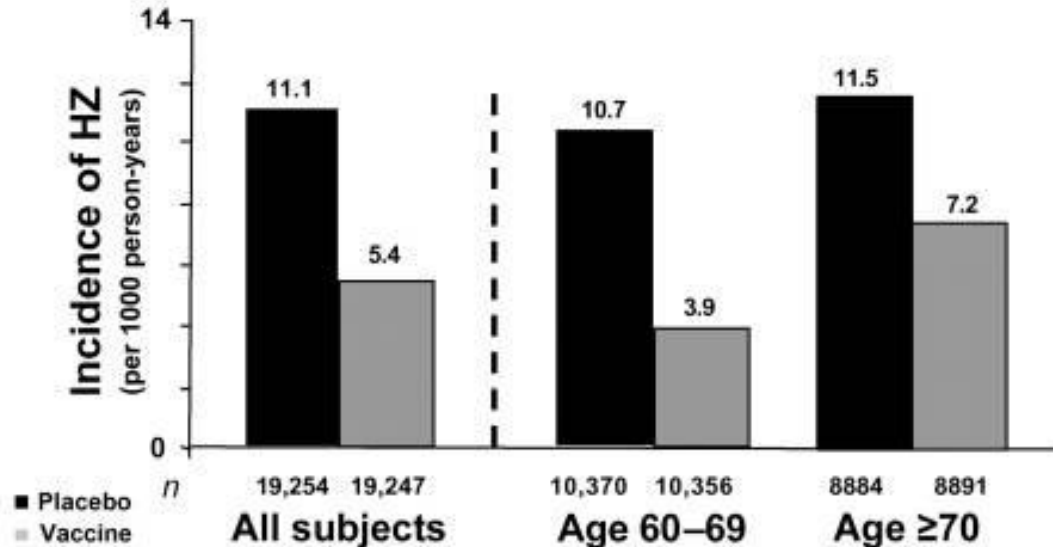
- Due to a billing issue, zoster vaccine could not be administered today, so Carol was advised to return. She comes back **11 months** later. PPSV23 can be given now. Do PPSV23 and zoster vaccine need to be separated?
 - Yes
 - No

Zoster and Pneumococcal Polysaccharide (PPSV) Vaccines

- Zoster package insert indicates providers consider zoster vaccine and PPSV not be administered concurrently
- Based on a study that showed *the titer* against VZV was lower in persons who received zoster and PPSV at the same visit compared to persons who received these vaccines 4 weeks apart
- Published studies have shown concurrent administration of zoster and PPSV does not affect zoster vaccine efficacy

Herpes zoster (HZ) vaccine efficacy for incidence of HZ

Efficacy (95% CI)	51.3% (44.2%–57.6%)	63.9% (55.5%–70.9%)	37.6% (25.0%–48.1%)
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ACIP Recommendation on Zoster Vaccine: Licensure for Persons Aged 50-59 Years

- ACIP recommends that “herpes zoster vaccine be routinely recommended for adults aged 60 years and older” (2011)*
- Zoster Work Group (October, 2013)**
 - HZ vaccine administration should be timed to achieve the greatest reduction in burden of HZ and its complications
 - There is insufficient evidence for long term protection offered by the HZ vaccine
 - Persons vaccinated under 60 years of age may not be protected when the incidence of HZ and its complications are highest

- *MMWR November 11, 2011 / 60(44);1528-1528 **MMWR August 22, 2014 / 63(33);729-731

Zoster Vaccine Summary

- Reduced risk of shingles by 51% (60+)
- Reduces risk of post herpetic neuralgia (PHN) by 67%
- Most effective in 60-69 year olds
- One in three adults will experience shingles in their life
- Zoster vaccine has 19,400 PFUs, **14 x that of varicella vaccine**
- Before administering zoster vaccine to those over 60, should you ask if they ever had chickenpox? No: only withhold if they have a contraindication to vaccine

Zoster Vaccine Summary

- Should we test for immunity before vaccine? No
- Tested and negative...oops! Give Varivax 2 doses at least 4 weeks apart
- If had shingles – wait until acute stage is over and symptoms abate – If administer too soon after disease, might reduce effectiveness of vaccine – ACIP has no recommendation but it might be prudent to wait 6-12 months after disease resolution

Influenza Vaccine

Three Types of Flu Vaccine for Older Adults

Which Do I Choose?

1. Inactivated Influenza Vaccine, Trivalent (IIV3), Standard Dose, Intramuscular
2. Inactivated Influenza Vaccine, Trivalent (IIV3), High Dose, Intramuscular
3. Inactivated Influenza Vaccine, Quadrivalent (IIV4), Standard Dose, Intramuscular

Advice: “For persons aged ≥ 65 years, **either** an age-appropriate standard dose IIV (IIV3 or IIV4) or high-dose IIV3 are acceptable options.” MMWR September 20, 2013 / 62(RR07);1 -43



Efficacy of High-Dose Compared to Standard Dose Flu Vaccine

DiazGranados et al. New Engl J Med 2014;371:635-45

	High Dose n=15,991 n (%)	Standard Dose N=15,998 n (%)	Relative Efficacy % (95% CI)
Cases*	228 (1.4)	301 (1.9)	24.2 (9.7-36.5)
* Laboratory Confirmed Flu by PCR, culture or both			

Strategies to Enhance Protection of Older Adults through Vaccination

Strategies to Enhance Protection of Older Adults Against Vaccine Preventable Disease

- Immunize persons who are potential sources of infection (herd immunity)- this includes children and healthcare personnel
- Ellis Hospital in 2013-2014 had healthcare personnel influenza vaccination rates of 90%
- Development of more effective vaccines for adults: e.g. pertussis containing vaccines with improved efficacy, duration of protection, adjuvanted vaccines, high dose vaccines

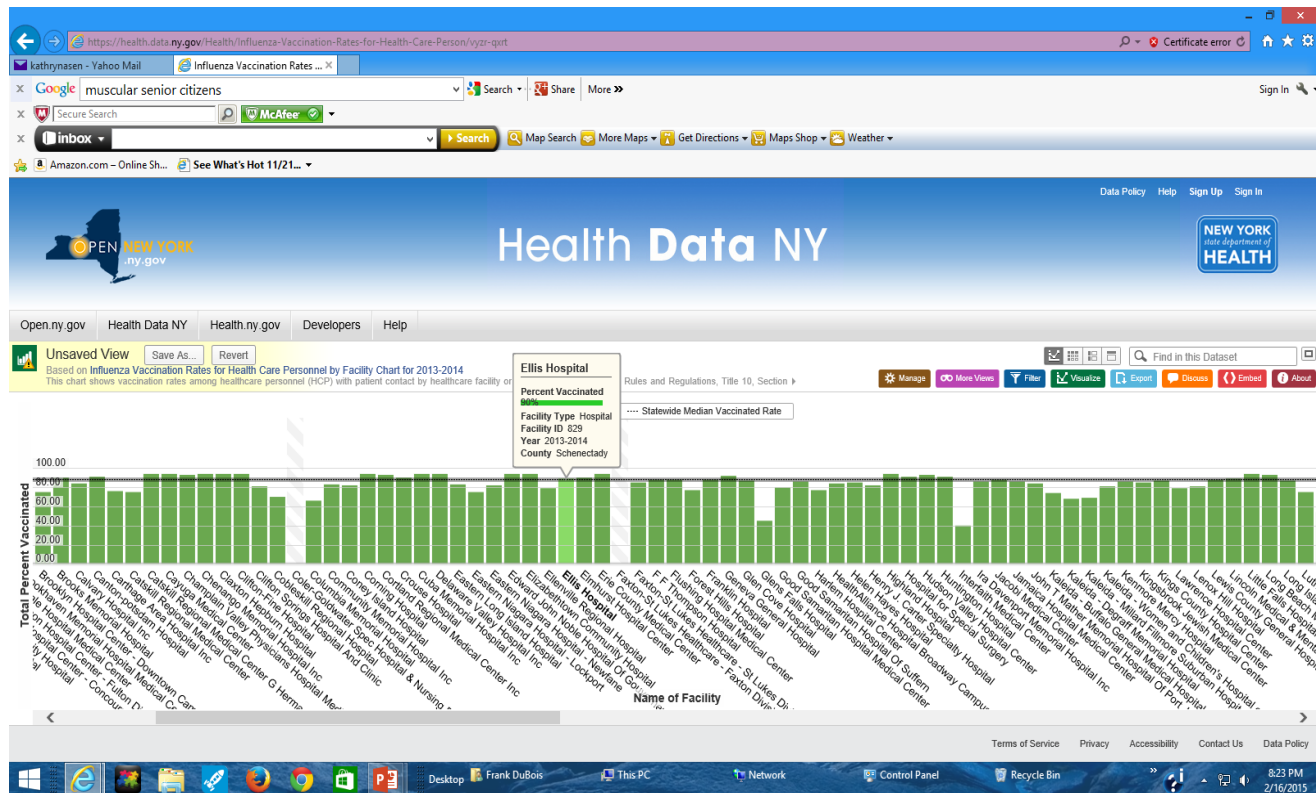
**Potter et al. J Infect Dis 1997;175:1-6; Carman et al. Lancet 2000; May limit the severity and spread of influenza and reduce resident mortality rate 34% to 42% 9198:93-97; Shugarman et al. JAMDA 2006;7:562-67; MMWR Jan 25, 2008 Vol. 57 No. 3

**MMWR September 28, 2012 / 61(38);753-757



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<https://health.data.ny.gov/>



Strategies to Enhance Protection of Older Adults Against Vaccine Preventable Disease

- Maintain high levels of immunization in across the lifespan – this includes adult populations
- Routine review of vaccine status at well visits - the recommendation from you as the HCP is critical!
- Utilize the New York State Immunization Information System (NYSIIS) for adults – verbal consent
- Prevention and control of illnesses such as Type II diabetes that contribute to immunosuppression

US Vaccination Coverage among Older Adults for Selected Vaccines- 2012

***Data Sources: CDC/National Center for Health Statistics, Behavioral Risk Factor Surveillance System, National Immunization Survey, National Health Interview Survey**

Vaccine*	Coverage (%)
Influenza in the past year	66.6
Pneumococcal, ever	59.9
Tetanus, last 10 years	55.1
Zoster, ever	20.0

Summary

- Aging population – diverse health states
- Immunization should be promoted throughout life – we need to think of vaccines as routine tools for preventive health – vaccination isn't optional, it's necessary
- Age appropriate vaccination should be promoted at every encounter with adults – just as we do with children and adolescents

Summary

- Currently available vaccines for older adults (e.g., influenza, pneumococcal, zoster) are clinically useful but the response for some individuals may be less than optimal
- Additional approaches to enhance protection of older adults against vaccine-preventable diseases include:
 - Strategies to boost immunity:
 - high dose vaccine, adjuvants in future vaccines
 - Indirect effects of vaccinating all eligible vaccine candidates
 - Herd immunity

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Center, Durham, NC



Resources

- New York State Department of Health, Bureau of Immunization
 - <https://www.health.ny.gov/prevention/immunization/>
- Centers for Disease Control and Prevention (CDC)
 - <http://www.cdc.gov/vaccines/>
- Advisory Committee on Immunization Practices (ACIP)
 - <http://www.cdc.gov/vaccines/acip/>
- Vaccine Adverse Event Reporting System
 - <https://vaers.hhs.gov/index>
- Standards for Adult Immunization Practice
 - <http://www.cdc.gov/vaccines/hcp/patient-ed/adults/for-practice/standards/index.html>
- Immunization Action Coalition - including “Ask the Experts”
 - <http://www.immunize.org/askexperts/>



Questions?

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Vaccine Preventable Disease Surveillance

New York State Department of Health

518-473-4437

kathryn.sen@health.ny.gov



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Yellow Fever (YF) Vaccine

- Revised yellow fever vaccine recommendations for international travelers
- A single dose of yellow fever vaccine is adequate for most travelers
- Additional doses may be indicated for certain populations

Yellow Fever Vaccine

- Additional doses for:
 - Women who were pregnant when they received their initial YF vaccine should receive *one* additional dose prior to their next travel that puts them at risk for YF virus infection
 - Individuals who received a hematopoietic stem cell transplant after receiving a dose of YF vaccine and who are now immunocompetent (vaccine eligible) should be revaccinated prior to their next YF at-risk travel

Yellow Fever Vaccine

- Additional doses for:
 - Individuals who were HIV-infected when they received their last dose of YF vaccine should receive a dose every 10 years if they continue to travel where they will be at-risk for YF infection

Yellow Fever Vaccine

- Booster dose of YF vaccine may be considered for travelers who received their last dose of YF vaccine at least 10 years previously and will be in a higher-risk setting based on season, location, activities and duration of travel
 - e.g. highly endemic areas such as West Africa during peak transmission season or areas with ongoing outbreaks